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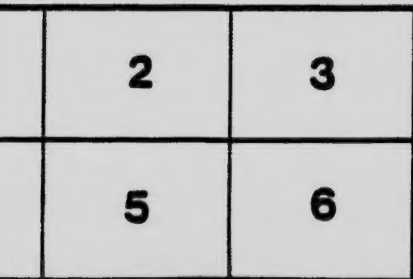
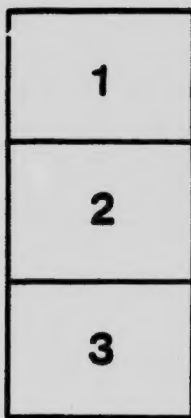
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PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE (HORTICULTURAL BRANCH).

ORCHARD INTERCROPS.

By P. E. FRENCH, B.S.A., ASSISTANT HORTICULTURIST.

THE growing of crops between orchard trees until they reach productive age is one of importance not only to the individual fruit-grower, but to the economic stability of the fruit industry as a whole. A few years ago a lack of knowledge as to the successful marketing of these intercrops, such as small fruits and vegetables, together with a wave of enthusiasm for absolutely clean cultivation of orchards, discouraged this practice. There has recently been a change in both respects. A great increase in the available market, and the discovery that car-load production was an essential to success with main-crop vegetables, together with experimental proof that careful men could grow intercrops with financial success and without injury to the trees, have materially altered the situation.

There are, however, certain requisites to success. The soil must be deep, in good physical condition, fertile, and be possessed of adequate moisture. A soil in condition to support only the growth of the trees cannot carry both trees and intercrop without injury to the former. A first step is to get the soil in proper condition by the use of cover crops or barnyard manure.

The climate must also be suitable. Early vegetables are successful only where they can be produced in time for market. Some non-irrigated districts are so dry in the summer-time that many intercrops requiring a large amount of moisture suffer or fail. These points all require local study.

The third important requisite to success, and perhaps the most important, is the market. Co-operative marketing is almost essential in getting a new district under way. Car-load production, as mentioned above, is often most desirable. Given a careful study of the entire situation, success is reasonably assured.

There is usually a living to be made from the land while the trees are coming into bearing age. Many crops which will bring good returns can be grown between the rows of trees while they are young, but it should always be remembered that the young trees are of first importance, and upon their present health and vigour depends the future usefulness of the orchard.

Intercropping of young orchards is generally discouraged for the reason that the trees are likely to be neglected or misused and the soil depleted of plant-food and moisture. It is by injudicious cropping, however, that young orchards are often most seriously injured. Extra care should be taken to maintain the fertility of the soil by the application of manure and fertilizers.

The growing of light crops is a means of keeping the land stirred when it might otherwise be neglected, and if the grower is careful to see that the physical condition of the land is improved, and adds enough plant-food to supply the loss, the light cropping of orchards for the first few years may be a decided benefit. The danger is that the fruit-grower might continue too long and expect too much from it. When the orchard comes into bearing, give it the entire land.

In orchards set less than 25 feet apart the land should rarely be cropped more than three years, but apple-orchards set 30 feet or more may be lightly cropped four or five years if extra good care is taken.

In irrigated sections there is a tendency to over-irrigate if there are inter-crops. This, of course, is detrimental to the trees. Quite often it makes the trees grow late in the fall and they are sent into the winter in a soft and unripened condition. When intercrops are grown an open strip, free from crops, should be left on each side of the row of trees. The width of this strip will vary somewhat according to the kind of crop grown. For an ordinary hoe crop the space free of crops should be about 4 feet on each side of the row of trees the first year, and this area should be widened each year as the trees grow older. This should be kept cultivated regularly throughout the growing season. The roots of a tree generally spread farther from the trunk than do the branches, so that in no case should crops be grown within a foot and one-half of the line below the outside of the branches. The drier the land the less it should be cropped unless irrigation-water is available.

CROP TO GROW.

Only annual crops should be grown in fruit plantations. In general, some low-growing crop which demands good tillage and comes off early is best. Almost any vegetable-crop may be grown, but with all such crops the question of markets should be carefully considered before planting any large area. In any section there is always something in the way of vegetables that can be grown at a profit. The kind of crop grown will also depend largely on the type of soil and the location of the orchard.

Grain or hay should never be grown in an orchard. They are especially objectionable because they do not permit of cultivation of the soil nor shade it sufficiently to keep it from baking. In some cases, such crops as wheat, rye, oats, clover, etc., may be grown in the winter season as cover crops to plough under, but if grown for grain or hay are too hard to preserve the moisture and the physical condition of the soil is not improved. A hoed crop is much more desirable. The growing of nursery stock in young orchards should be discouraged. This crop makes the same demands upon the soil as the orchard itself, and it does not allow the variations in cultivation and management which are possible when different crops are grown. Nursery stock is known to be particularly hard on land, so much so that nurserymen seldom grow two crops of nursery stock in succession on the same area.

Potatoes may be mentioned as a crop well adapted to grow in young orchards. It is a staple commodity and is often shipped across the continent, but in order to do this the community must produce a sufficient quantity to ship in car-load lots. If early potatoes are grown, a cover crop of rye or wheat, or sometimes clover, may be planted after the potatoes are harvested. Potatoes thrive best on the light or medium soils, but occasionally heavier soils are found that are adapted to the crop. Potatoes require the cultivation of the soil in the spring and early part of the summer, and consequently are among the best to grow in the orchard.

Early corn, onions, carrots, beets, etc., are good crops to grow as inter-crops in the young orchard, because they all require good cultivation and generally tempt the manager to liberal fertilizing.

In fruit districts where canning-factories are being built, such crops as tomatoes, corn, and beans may be grown, as it is often difficult for the factories to get a sufficient supply of these crops.

When clovers or vetches are grown it is well to leave a good wide strip on each side of the trees for cultivation, especially where irrigation is not available, so that the trees will not suffer from lack of moisture. One crop can then be taken off, and the second crop allowed to grow to plough under next spring. This supplies nitrogen and adds humus to the soil. Small fruits are often grown as intercrops, and sometimes with very good results. Bush-fruits should never be planted within 9 feet from the row of trees, and the ground needs extra good cultivation. There is always a danger of leaving bush-fruits too long in the orchard. In irrigated sections strawberries are sometimes grown with good results. There is not the danger of over-watering this crop that there is in the case of the bush-fruits, as the strawberry season is over quite early.

Young orchards should never be left in sod. Sod lands are not only drier than cultivated ground, but they are favourite breeding-places of insects. Mice often harbour in sod lands, and often do considerable damage to young trees.

There are a few cases where sod may be grown in old orchards, but it is the exception rather than the rule. In such a case as a very steep hillside where there was plenty of moisture available it might be an advantage to leave the orchard in sod. However, nothing should be taken off the ground. The grass should be cut and left on the ground.

We are often asked if it pays to grow intercrops in the bearing orchard. There is no doubt but that it does not pay. One cannot expect to get two crops of produce from the same ground. The roots of the bearing trees require all the ground for the best development of the tree and fruit. The only crop that should be grown in a bearing orchard is a cover crop to plough under.

The writer does not advocate cropping the young orchard in all cases. Where a grower has sufficient capital to carry him over until the fruit-trees are bearing, it may be better not to take anything off the ground. He has a much better chance to enrich the ground by ploughing under leguminous crops, as clover, etc., when the trees are young than when they are large and bearing. It is sometimes hard to get a good catch when the trees are large and shade the ground. If one is in such a position he should be able to have the ground in a better condition when the trees are old enough to bear fruit than the man who is obliged to grow intercrops. However, we are not all able to do this and we must be governed largely by our circumstances.

Taking the situation as a whole, it would seem that the opportunities for the small fruit-grower are encouraging, not only to make a living, but an income as well, while his orchard is coming into bearing age. Many men are making extra large profits from the intercrops, but some are doing it at the expense of the orchard. However, this need not be if extra good care is taken to replace the plant-food and humus which is lost by the growing of crops. It must always be remembered that where crops are growing between the trees, they are taking food material out of the soil, and that it is necessary to fertilize the ground well in the meantime, so that the soil will not be in an impoverished condition when the trees begin to bear.

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